

CLAIMS:

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1. A chemical vapor deposition apparatus comprising:
a deposition chamber defined partly by a chamber wall, the chamber wall having an innermost surface inside the chamber and an outermost surface outside the chamber; and
a valve body having a seat between the innermost and outermost surfaces of the chamber wall.
 2. The apparatus of claim 1 wherein the chemical vapor deposition apparatus comprises an atomic layer deposition apparatus.
 3. The apparatus of claim 1 wherein the chamber wall comprises a lid.
 4. The apparatus of claim 1 wherein the valve body includes a portion of the chamber wall as at least a part of the seat.
 5. The apparatus of claim 1 wherein the valve body comprises at least a part of a valve housing between the innermost and outermost surfaces of the chamber wall.

6. The apparatus of claim 5 wherein the valve body includes a portion of the chamber wall as at least a part of the valve housing.

7. The apparatus of claim 1 further comprising at least a part of a process chemical inlet to the valve body between the innermost and outermost surfaces of the chamber wall.

8. The apparatus of claim 7 wherein the chamber wall forms at least a part of the chemical inlet.

9. A chemical vapor deposition apparatus comprising:
a deposition chamber having a lid;
a process chemical opening completely through the lid; and
an isolation mechanism proximate the chemical opening, the lid being integral to the isolation mechanism and the isolation mechanism selectively isolating the deposition chamber from receiving material through the chemical opening.

10. The apparatus of claim 9 wherein the chemical vapor deposition apparatus comprises an atomic layer deposition apparatus.

11. The apparatus of claim 9 wherein the isolation mechanism comprises a valve.

12. The apparatus of claim 11 wherein the lid comprises at least a part of a seat of the valve.

13. The apparatus of claim 11 wherein the lid comprises at least a part of a housing of the valve.

14. The apparatus of claim 11 wherein the lid comprises at least a part of a process chemical inlet to the valve.

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15. A chemical vapor deposition apparatus comprising:

a deposition chamber having a lid; and

a valve body including a portion of the lid as part of the valve body, the valve body selectively shutting off flow of a process chemical into the chamber, adjusting the flow rate of the chemical into the chamber, or both.

16. The apparatus of claim 15 wherein the chemical vapor deposition apparatus comprises an atomic layer deposition apparatus.

17. The apparatus of claim 15 wherein at a 50% open position as indicated by a stem position the valve body provides a flow rate of no more than about 50% of a maximum flow rate through the valve body.

18. The apparatus of claim 15 wherein the portion of the lid comprises at least a part of a valve housing.

19. The apparatus of claim 18 wherein the part of the valve housing comprised by the portion of the lid is defined by a cylindrical opening in the lid, the valve body further comprising a stem coincident with a central axis of the cylindrical opening and positioned at least partially within the cylindrical opening.

20. The apparatus of claim 15 wherein the portion of the lid comprises at least a part of a valve seat.

21. The apparatus of claim 20 wherein the entirety of the valve seat is between an innermost surface of the lid inside the chamber and an outermost surface of the lid outside the chamber.

22. The apparatus of claim 20 wherein the valve seat comprises a plug seat or a diaphragm seat.

23. The apparatus of claim 20 wherein the part of the valve seat comprised by the portion of the lid is defined by a beveled lid surface around a cylindrical opening through the lid, the valve body further comprising a plug complementary to the beveled lid surface.

24. The apparatus of claim 20 wherein the part of the valve seat comprised by the portion of the lid is defined by an annular platform around a cylindrical opening through the lid, the valve body further comprising a plug and a diaphragm between the plug and annular platform.

25. The apparatus of claim 15 wherein the portion of the lid comprises at least a part of a process chemical inlet in the valve body.

26. The apparatus of claim 25 wherein the apparatus further comprises a process chemical inlet through the lid to the chemical inlet in the valve body.

27. A chemical vapor deposition apparatus comprising:

a deposition chamber having a lid, the lid having an inner surface inside the chamber, an outer surface outside the chamber, and an opening defined by sidewalls extending between the inner and outer surfaces;

a valve body having a housing and a seat;

at least a part of the housing comprising at least a part of the outer surface of the lid, at least a part of the opening sidewalls of the lid, or both; and

at least a part of the seat comprising at least a part of the inner surface of the lid, at least a part of the opening sidewalls of the lid, or both.

28. The apparatus of claim 27 wherein the chemical vapor deposition apparatus comprises an atomic layer deposition apparatus.

29. The apparatus of claim 27 further comprising a process chemical inlet to the valve body, a lid portion between the inner surface and the outer surface forming at least a part of the chemical inlet.

30. A chemical vapor deposition method comprising:
providing a process chemical supply line to a chamber wall partly
defining a deposition chamber;

temporarily isolating the supply line from the deposition chamber at
the chamber wall;

while isolated at the chamber wall, filling the supply line with
chemical through a supply valve upstream from the chamber wall, the
supply line being filled to a first pressure;

releasing chemical from the supply line into the deposition chamber
at the chamber wall; and

again temporarily isolating the supply line from the deposition chamber
at the chamber wall.

31. The method of claim 30 wherein the chamber wall comprises
a lid.

32. The method of claim 30 further comprising, while releasing
chemical into the deposition chamber, maintaining chemical in the supply
line between the supply valve and the chamber wall at about a second
pressure.

33. The method of claim 31 wherein the first and second pressures are about the same.

34. The method of claim 30 further comprising closing the supply valve after the filling the supply line with chemical and before the releasing the chemical into the deposition chamber.

35. The method of claim 30 further comprising purging chemical from the deposition chamber after again temporarily isolating the supply line from the deposition chamber.

36. The method of claim 30 wherein the chemical vapor deposition method comprises atomic layer deposition.